Attachment D

Revised 2011 Base-Year
Emissions Inventory

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REVISED 2011 BASE-YEAR EMISSIONS INVENTORY FOR INDIANA'S PORTION OF THE CHICAGO-NAPERVILLE, ILLINOIS-INDIANA-WISCONSIN (IL-IN-WI), 2008 8-HOUR OZONE NONATTAINMENT AREA

Lake and Porter Counties, Indiana

Developed By:

The Indiana Department of Environmental Management

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LAKE AND PORTER COUNTIES, INDIANA

1.0 INTRODUCTION

Under Section 107(d)(1)(B) of the Clean Air Act (CAA), on August 23, 2019, effective September 23, 2019 (84 FR 44238), United States Environmental Protection Agency (U.S. EPA) reclassified Lake and Porter counties as serious nonattainment for the 2008 8-hour ozone NAAQS as a portion of the Chicago-Gary-Lake County, Illinois-Indiana (IL-IN) nonattainment area (40 Code of Federal Regulation 81.315).

Section 182(b)(1)(B) of the CAA requires states to develop a comprehensive, accurate, and current inventory of actual emissions from all sources in the nonattainment area, including periodic revisions as the Administrator may determine necessary to assure that the requirements for this part are met. U.S. EPA guidance requires the submittal of a comprehensive state implementation plan quality emissions inventory of ozone precursor emissions (i.e. oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) representative of the base year.

On February 13, 2019, effective March 15, 2019 (84 FR 3711), Indiana fulfilled the requirement for a revised 2011 Base-Year Emissions Inventory for Indiana's portion of the nonattainment area (Lake and Porter counties) classified as moderate.[1] Upon review of this documentation, Indiana has determined that this inventory should be updated to the latest/most recent inventory available based on the 2011v6.3 platform (i.e. 2011en).

As such, this current up-to-date base-year emissions inventory satisfies Indiana's obligation under Section 182(b)(1)(B) of the CAA for the 2008 8-hour ozone standard for Lake and Porter counties classified as serious, as amended by the final ruled titled Implementation of the 2008 National Ambient Air Quality Standard for Ozone: State Implementation Plan Requirements (80 FR 12264, March 6, 2015), for the 2008 8-Hour Ozone NAAQS.

2.0 BASE-YEAR EMISSIONS INVENTORY

U.S. EPA's proposed 2008 ozone standard SIP requirements rule recommends states use 2011 as the base-year to fulfill the emission inventory requirements. The year 2011 is also a required reporting year for U.S. EPA's National Emissions Inventory (NEI) submission under the existing Air Emission Reporting Requirements Rule. NEIs are a collaborative process between U.S. EPA, states, localities, and tribes (S/L/T) to build a comprehensive national inventory.

[1] https://www.govinfo.gov/content/pkg/FR-2019-02-13/pdf/2019-02212.pdf

In consultation with U.S. EPA, the year 2011 was selected to fulfill the requirement of a base-year inventory. The Indiana Department of Environmental Management (IDEM) has prepared a comprehensive and accurate inventory of ozone precursor emissions (i.e. NO_x and VOCs) for Lake and Porter counties, Indiana, organized by anthropogenic source categories: electric-generating units (EGUs), non-EGUs, non-point (area), non-road, and on-road. IDEM's Office of Air Quality (OAQ) collects data, calculates, and stores emissions for point sources on an annual basis in the Emission Inventory Tracking System (EMITS). These point source emissions are uploaded to the NEI each year. Indiana used the 2011v6.3 emissions modeling platform from the National Emissions Inventory Collaborative that includes a full suite of base year (2011) and projection year (2023) inventories, ancillary emission data, and scripts and software for preparing the emissions for air quality modeling. These remaining sectors (EGU, non-EGU, and non-point) were interpolated between 2011 and 2023.

On-road values for Lake and Porter counties in 2020 were produced by U.S. EPA's 2014a version of the MOVES software program by the Northwestern Indiana Planning Commission (NIRPC) (Appendix A3). Emission rates for 2017 were interpolated from the 2015 and 2020 runs using specs specific to 2017.

2.1 Point (EGU and Non-EGU)

IDEM's Office of Air Quality (OAQ) collects data, calculates, and stores emissions for point sources on an annual basis in the Emission Inventory Tracking System (EMITS). These point source emissions are uploaded to the NEI each year using the Emission Inventory System (EIS) and feedback is provided to U.S. EPA on a variety of other estimates. Point source data was collected through Indiana's Emission Statement Program according to Title 326, Article 2, Rule 6 of the Indiana Administrative Code (326 IAC 2-6). All data is collated into the EMITS and submitted to U.S. EPA through the EIS Gateway. U.S. EPA has added to this inventory, incorporating data from various sources such as data submitted to the Clean Air Markets Database. Airport operations are handled as point sources in the database (see Section 3.42 of the "2011 Base-Year National Emissions Inventory, version 3 Technical Support Document".

2.2 Non-Point

Non-Point sources were developed by U.S. EPA with comments provided by the state, see inset from Section 2.2 U.S. EPA Non-Point data from the "2011 Base-Year National Emissions Inventory, version 3 Technical Support Document";

> For the 2011 NEI, U.S. EPA developed emission estimates for many Non-Point sectors in collaboration with a consortium of state and regional planning organizations called the Eastern Regional Technical Advisory Committee (ERTAC). This task is referred to by ERTAC as the "Area Source Comparability" project on the ERTAC website, and a subgroup was developed to work on this project. The purpose of the subgroup and project was to agree on methodologies, emission factors, and SCCs for a number of important Non-Point sectors, allowing U.S. EPA to prepare the emissions estimates for all states

using the group's final approaches. During the 2011 NEI inventory development cycle, S/L/T agencies could accept the ERTAC/EPA estimates to fulfill their Non-Point emissions reporting requirements. U.S. EPA encouraged S/L/T agencies that did not use U.S. EPA's estimates or tools to improve upon these "default" methodologies and submit further improved data.

Section 2, Stationary sources, in the "2011 Base-Year National Emissions Inventory, version 3 Technical Support Document" details the emission estimation methods, sources of data for inputs, where states provided input and how controls were taken into account.

2.3 Non-Road

Non-road sources were also developed by U.S. EPA using the National Mobile Inventory Model. See Section 2.4 of the "2011 Base-Year National Emissions Inventory, version 3 Technical Support Document" for more information on the inputs and the estimation techniques.

2.4 On-Road

On-road values for Lake and Porter counties in 2020 were produced by U.S. EPA's 2014a version of the MOVES software program by the Northwestern Indiana Planning Commission (NIRPC) (Appendix A3). Emission rates for 2017 were interpolated from the 2015 and 2020 runs using specs specific to 2017.

These estimates were used for the Emissions Inventory to align with the Conformity Inventories. See Attachment 2.

3.0 TEMPORAL ALLOCATION OF ANNUAL EMISSIONS

Indiana used U.S. EPA's temporal files found on the Emissions Modeling Clearinghouse to estimate the average ozone season day emissions following the guidance from the Greg Stella memo, "Temporal Allocation of Annual Emissions Using EMCH Temporal Profiles".[2]

3.1 Summary and Detailed Tables

The following tables show the differences between VOCs and NO_x in the two aforementioned 2011 base-year inventories for Lake and Porter counties. The inventories were pulled under different platforms – 2011v6.2 (approved in 2017) and 2011v6.3 (current version).

[2] https://www.epa.gov/sites/production/files/2016-09/documents/2011v6_3_2017_emismod_tsd_aug2016_final.pdff

Table 3.1 VOC Tons Ozone Season Day Emissions by Data Category

County	Data Category	VOC 2011v6.2	VOC 2011v6.3	Difference
Lake	EGU	0.44	0.33	-0.11
Lake	Non-Point	12.54	12.65	+0.11
Lake	Non-Road	7.55	11.34	+3.79
Lake	Point	15.39	15.54	+0.15
Lake	On-Road	6.92	6.94	+0.02
Porter	EGU	0.19	0.21	+0.02
Porter	Non-Point	5.53	5.61	+0.08
Porter	Non-Road	6.64	10.09	+3.45
Porter	Point	1.68	1.68	0.0
Porter	On-Road	2.66	2.64	-0.02

Table 3.2 NO_x Tons Ozone Season Day Emissions by Data Category

County	Data Category	NO_X 2011v6.2	NO_x 2011v6.3	Difference
Lake	EGU	24.62	18.98	-5.64
Lake	Non-Point	5.80	5.66	-0.14
Lake	Non-Road	8.07	9.68	+1.61
Lake	Point	43.10	47.28	+4.18
Lake	On-Road	17.85	17.24	-0.61
Porter	EGU	5.53	5.06	-0.47
Porter	Non-Point	3.89	3.73	-0.16
Porter	Non-Road	4.62	6.16	+1.54
Porter	Point	23.36	23.49	+0.13
Porter	On-Road	6.85	7.46	+0.61

Table 3.3 Tons per Ozone Season Day Emissions by Sector

County	Data Category	Sector	NO_x	VOC
Lake	EGU	EGU	18.98	0.33
Lake	Non-Point	Agricultural Fires	0.00	0.00
Lake	Non-Point	Commercial Marine (Class 1 & 2)	0.00	0.00
Lake	Non-Point	Commercial Marine (Class 3)	0.02	0.00
Lake	Non-Point	Non-Point	2.03	12.23
Lake	Non-Point	Non-Point Oil & Gas	0.00	0.00
Lake	Non-Point	Rail	3.58	0.18
Lake	Non-Point	Residential Wood Combustion	0.03	0.24
Lake	Non-Road	Non-Road	9.68	11.34

County	Data Category	Sector	NO_x	VOC
Lake	On-road	On-Road	17.24	6.94
Lake	Point	Point	45.96	15.34
Lake	Point	Point Oil & Gas	1.32	0.20
Porter	Non-Point	Agricultural Fires	0.00	0.00
Porter	Non-Point	Commercial Marine (Class 1 & 2)	0.00	0.00
Porter	Non-Point	Commercial Marine (Class 3)	0.03	0.00
Porter	Non-Point	Non-Point	0.68	5.38
Porter	Non-Point	Non-Point Oil & Gas	0.00	0.00
Porter	Non-Point	Rail	3.01	0.15
Porter	Non-Point	Residential Wood Combustion	0.01	0.08
Porter	Non-Road	Non-Road	6.16	10.09
Porter	On-Road	On-Road	7.46	2.64
Porter	EGU	EGU	5.06	0.21
Porter	Point	Point	23.49	1.68
TOTAL			**144.75**	**67.03**

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